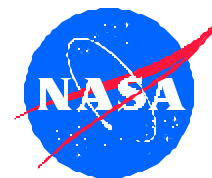


Millimeter Converters for Satellite Communications

*Hittite Microwave Corporation
Chelmsford, MA*



INNOVATION

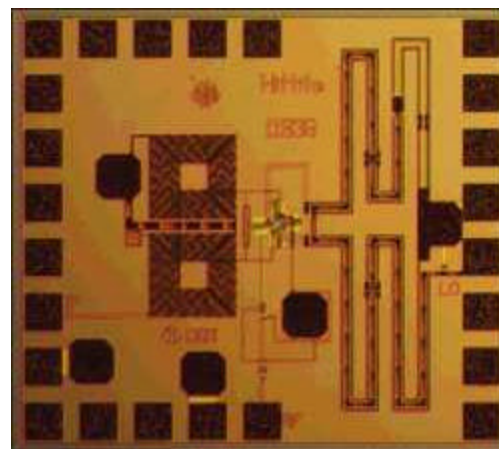
Sub-harmonically pumped converter IC
chips for K/Ka-band converters

ACCOMPLISHMENTS

- ◆ Successfully demonstrated and developed a family of fully integrated GaAs MMIC chips for millimeter wave converters with capabilities to operate with local oscillators operating at sub-harmonic frequencies

COMMERCIALIZATION

- ◆ Developed commercial products with generic application potentials in millimeter wave communication systems, including commercial Local Multi-point Distribution Systems (LMDS), 20/30 GHz VSAT/USAT ground stations, point-to-point microwave radios operating in 20-40 GHz bands
- ◆ As a result of this SBIR, Hittite introduced a family of five converters to the open market as standard commercial products. The sales volume of those parts up to October 2001 amounts to \$1M
- ◆ Key customers include: Hughes, Ericsson, and Netro. Subsequent to the initial introduction of those parts, Hittite's product line for millimeter wave MMICS has been expanded to include 6 additional mixers and 4 amplifiers



One of The New Converters

GOVERNMENT/SCIENCE APPLICATIONS

- ◆ Millimeter wave communication systems will be a critical part of the future military operations providing communication links between multiples of operating units
- ◆ Millimeter wave MMIC converters will be a critical part of light-weight mobile/portable terminals for those systems